Patent Claims

1. A method for controlling a vehicle, wherein the rotation behavior of the individual wheels is measured and evaluated in order to determine the vehicle reference speed, wheel slip, wheel acceleration and other control values used for proportioning and/or modulating the brake pressure in the wheel brakes of the wheels being controlled and/or for an intervention in the engine management, **characterized in that**, in order to identify a gravel road or similar road with a higher slip requirement, the vibration behavior of the individual wheels on the driven axle is detected and evaluated, and in that the driving situation of a gravel road is then considered to have been identified and/or a corresponding control function of the vehicle control system is only activated when the wheel acceleration on at least two wheels exceeds a specified wheel acceleration limit value (B_{lim}) and when the at least two wheels exhibit a certain vibration behavior.

2. Method according to Claim 1, **characterized in that** a gravel road is considered to have been identified and/or a corresponding control function of the vehicle control system is only activated when the period of a vibration on at least two driven wheels lies within a specified range (T_1, T_2) or when the period of a vibration on at least two driven wheels reaches a specified limit value.

3. Method according to Claim 2, **characterized in that** a wheel acceleration limit value (B_{lim}) is specified within a range of 1g to 2g, preferably about 1.5g.

4. Method according to Claim 2 or 3, **characterized in that** a period range (T_1, T_2) of 30 msec. (T_2) to 150 msec. (T_1) or a limit value for the period of about 50 msec. is specified.

5. Method according to one of the Claims 1 to 4, **characterized in that** a gravel road is then considered to have been identified and/or a corresponding control function of the vehicle control system is only activated when the driven wheels exhibit a specified traction slip.

6. Method according to Claim 5, **characterized in that** a traction slip is specified within a range of 0 km/h (S_2) to 50 km/h (S_1).

7. Method according to one of the Claims 1 to 6, **characterized in that** a gravel road is then considered to have been identified and/or a corresponding control function of the vehicle control system is only activated when the calculated or estimated vehicle reference speed (V_{ref}) falls below a specified vehicle speed limit value (V_{lim}).

8. Method according to Claim 7, characterized in that a vehicle speed limit value (V_{lim}) is specified within a range of 60 km/h to 100 km/h, preferably about 80 km/h.

9. Method according to one of the Claims 1 to 8, **characterized in that** a gravel road is then considered to have been identified and/or a corresponding control function of the vehicle control system is only activated when the conditions for a gravel road according to Claims 1 to 8 were identified in a vehicle with all-wheel drive on both wheels of one side of the vehicle and/or a vehicle axle.

10. Method according to one of the Claims 1 to 8, **characterized in that** a gravel road is then considered to have been identified and/or a corresponding control function of the vehicle control system is only activated when the conditions for a gravel road according to Claims 1 to 8 were identified in a vehicle with one driven axle on both wheels on the driven axle.

11. Method for controlling a vehicle, such as an anti-lock system (ABS), traction slip control (TCS) or driving-dynamics control system (EDS), in which the rotation behavior of the individual wheels is measured and evaluated to determine the vehicle reference speed, wheel slip, wheel acceleration and other control values used for evaluating and/or modulating the brake pressure in the wheel brakes of the wheels being controlled and/or an intervention in the engine management, **characterized in that** an engine control threshold and/or brake control threshold is increased to a specified value after a gravel road has been identified, especially by means of a method according to one of the Claims 1 to 10.

12. Method according to Claim 11, **characterized in that** an engine control threshold is predefined in a range of 2 km/h to 10 km/h, preferably about 3 km/h, and/or a brake control threshold is predefined in a range of 0 km/h to 10 km/h, preferably about 3 km/h.

13. Method according to Claim 11 or 12, **characterized in that** the brake control threshold is increased only when strongly overspeeding wheels are detected.

14. Circuit arrangement for controlling a vehicle, such as an anti-lock system (ABS, traction slip control (TCS) or driving-dynamics control system (ESP), **characterized in that** such circuit exhibits an identification circuit (20) to identify a gravel road or a similar road with higher slip requirement, wherein a detection circuit (21) for detecting the vibration behavior of the individual wheels is associated with the identification circuit (20), and the output (22) of the detection circuit (21) is connected to an input (23) of an evaluation circuit (24) for evaluating the detected vibration behavior, and the identification circuit (20) exhibits an integrator (25) and a signal generator (26) for generating a signal when a certain vibration behavior typical for gravel roads is detected on the wheels over a period of time predefined by the integrator (25) with the help of the evaluation of the evaluation circuit (23).

15. Circuit arrangement according to Claim 14, **characterized in that** a calculating circuit (27) is associated with the identification circuit (20), which calculates the vehicle reference speed on the basis of measured values and whose output (28) is connected to an input (29) of a first comparator (30) which is used for comparing the calculated vehicle reference speed with a specified limit value and is connected via an output (31) to an input (32) of the evaluation circuit (23) which compares the detected vibration behavior of the individual wheels, in particular the period of vibration, with specified limit values; that the identification circuit (20) exhibits a second comparator (33) for comparing the wheel acceleration with a wheel acceleration limit value, a third comparator (34) for comparing the vibration behavior of the individual wheels to one another, and a fourth comparator (35) for comparing the traction slip of the wheels with a specified limit value; and that the signal generator (26) is

connected via an output (36) to an input (37) of a device (38) used for intervening in the brake control and/or engine control when an appropriate signal for an identified driving situation on a gravel road is emitted.